We Claim

1. A method of determining blood flow in a conduit, comprising compensating for an injectate induced thermal offset of a first thermal dilution sensor connected to a catheter, the injectate induced thermal offset resulting from travel of the injectate through the catheter.

2. The method of Claim 1, wherein compensating for an injectate induced cooling of a thermal dilution sensor includes pre-calibrating thermal conductive properties of the catheter.

3. The method of Claim 2, wherein pre-calibrating thermal conductive properties of the catheter includes determining a thermal transfer coefficient K_i, such that $K_i = \frac{\Delta T_i}{(T_b - T_i)}$; where T_b corresponds to the temperature of the blood, T_i corresponds to the temperature of the injectate and ΔT_i is the change in the thermal dilution sensor temperature from the injectate induced cooling.

4. The method of Claim 1, wherein compensating for an injectate induced cooling of a thermal dilution sensor includes calculating an inside cooling effect on the thermal dilution sensor in response to at least two introductions of injectate into the conduit.

5. The method of Claim 4, further comprising introducing a first injectate having a first volume and introducing a second injectate having a different second volume.

6. The method of Claim 4, further comprising introducing a first injectate over a first time and introducing a second injectate over a different second time.

7. The method of Claim 1, wherein compensating for an injectate induced thermal offset of a first thermal dilution sensor includes inducing a second thermal offset in a second thermal dilution sensor resulting from travel of the injectate through the catheter.

8. The method of Claim 1, wherein compensating for an injectate induced thermal offset of a first thermal dilution thermal sensor includes thermally

exposing a second dilution sensor to a fractional portion of injectate introduced into the conduit.

9. The method of Claim 1, wherein compensating for an injectate induced thermal offset of a first thermal dilution sensor includes locating a second thermal dilution sensor relative to one of the injectate traveling through the catheter and blood flow, to have thermal conductivity properties different from the first thermal dilution sensor.

10. The method of Claim 1, wherein compensating for an injectate induced thermal offset of a first thermal dilution sensor includes thermally insulating the first thermal dilution sensor from the injectate prior to introduction of the injectate into the blood flow in the conduit.

11. A method of determining a blood flow in a conduit, the method comprising:

(a) sensing a blood parameter related to blood temperature;

(b) passing an injectate through a lumen in a catheter, the passing injectate inducing a measurement offset in a blood parameter sensor; and

(b) compensating for the measurement offset of the blood parameter sensor.

12. The method of Claim 11, wherein compensating for the measurement offset includes pre-calibrating the blood parameter sensor.

13. The method of Claim 11, wherein compensating for the measurement offset includes measuring a blood parameter at two spaced apart locations.

14. The method of Claim 11, wherein compensating for the measurement offset includes adjusting a measured parameter by a calibration coefficient.

15. The method of Claim 11, wherein compensating for the measurement offset includes introducing a first injectate volume into the blood flow and introducing a different second injectate volume into the blood flow.

16. The method of Claim 11, wherein compensating for measurement offset includes thermally isolating the blood parameter sensor from the injectate passing through the lumen in the catheter.

17. A method of thermodilution measurement of a blood flow rate in a conduit, the method comprising compensating for an injectate induced thermal variance of a thermal dilution sensor, the induced thermal variance resulting from an injectate flow through a catheter.

18. A method of thermodilution measurement of blood flow rate by a retrograde catheter, the method comprising:

(a) identifying a thermal transfer coefficient for the retrograde catheter; and

(b) adjusting a thermal dilution sensor measurement by an amount corresponding to the thermal transfer coefficient.

19. The method of Claim 18, further comprising relating the thermal transfer coefficient to one of a temperature of the blood flow, a temperature of an injectate, a rate of flow of the injectate and the blood flow rate.

20. A method of determining a blood flow by thermodilution measurement, comprising:

(a) calculating the blood flow from a measured first dilution curve corresponding to a first injectate volume having a first injectate time and a first injectate temperature, and from a measured second dilution curve corresponding to a second injectate volume having a second injectate temperature and a second injectate time.

21. A method of determining a blood flow rate by thermodilution measurement, comprising:

(a) determining the blood flow rate in response to a temperature of the blood flow, a temperature of an injectate, a volume of the injectate, a dilution curve from a proximal thermal dilution sensor and a dilution curve from a distal thermal dilution sensor, wherein at least a portion of the injectate is introduced into the blood flow at a location between the proximal thermal dilution sensor and the distal thermal dilution sensor.

22. A method of determining a blood flow by thermodilution measurement, the method comprising:

(a) exposing a first thermal sensor to a first thermal influence of an injectate flowing in an injectate lumen in a catheter and to a first thermal influence of the blood flow diluted by the injectate, and

(b) exposing a second thermal sensor to a different second thermal influence of one of the injectate flowing in the injectate lumen and the blood flow diluted by the injectate.

23. A method of determining blood flow by thermodilution measurement, the method comprising:

(a) passing a first portion of an injectate volume through a first introduction port in a catheter, to combine the first portion of the injectate with the blood flow thereby forming a first diluted flow;

(b) thermally sensing the first diluted flow with a first thermal dilution sensor;

(c) passing a balance of the injectate volume through at least a second introduction port to combine with the first diluted flow to form a second diluted flow; and

(d) thermally sensing the second diluted flow with a second thermal dilution sensor.

24. A method of determining a blood flow rate by thermodilution measurement comprising:

(a) determining the blood flow rate corresponding to a factor representing an amount of an injectate volume passing through a proximal introduction port, a difference between a blood flow temperature and an injectate temperature, and a difference between an upstream dilution curve obtained upstream of the proximal introduction port and a downstream dilution curve obtained downstream of the proximal introduction port.

25. A method of determining blood flow rate by thermodilution measurement with a retrograde catheter, comprising:

(a) determining the blood flow rate corresponding to a first dilution curve from a first thermal sensor having first thermal conductive properties, and a

second dilution curve from a second thermal sensor having different second thermal conductive properties, and an injectate volume.

26. The method of Claim 1, further comprising determining a calibration coefficient for the catheter.

27. The method of Claim 26, further comprising adjusting the calibration coefficient in response to a blood flow rate in the conduit or an injection rate of the induced injectate.

28. The method of Claim 26, further comprising increasing the calibration coefficient in response to a reduced blood flow rate.

29. The method of Claim 26, further comprising decreasing the calibration coefficient in response to an increased blood flow.